Exercise - I (Conceptual Questions) Build Up Your Understanding

Metallurgy

1. Which of the following is not an ore of Iron:-
(1) Haematite (2) Limonite
(3) Cassiterite (4) Magnetite

2. Aluminium is obtained from Al_2O_3 by –
(1) Thermal reduction.
(2) Hydro metallurgical method.
(3) Electrolytic reduction.
(4) Reduction by iron.

3. Zinc blende on roasting in air gives :–
(1) Zinc carbonate (2) SO_2 and ZnO
(3) ZnS and $ZnSO_4$ (4) CO_2 and ZnO

4. The oxide cannot be reduced by coke
(1) Cu_2O, ZnO (2) Fe_2O, ZnO
(3) CaO, K_2O (4) PbO, Fe_3O_4

5. An example of halide ores is:-
(1) Galena (2) Bauxite
(3) Cinnabar (4) Cryolite

6. Which is not a basic flux :-
(1) Silica (2) Lime stone
(3) Calcite (4) Quick lime

7. Iron pyrites ore is concentrated by:-
(1) Froth floatation
(2) Electrolysis
(3) Roasting
(4) Magnetic separation

8. Which of the following metal is extracted by electrolytic reduction process of its halide are:-
(1) Copper (2) Iron
(3) Sodium (4) Aluminium

9. Which of the following metal can not be extracted by smelting process:-
(1) Lead (2) Zinc
(3) Iron (4) Aluminium

10. The reducing agent for the extraction of iron metal at low temperature in a blast furnace is:-
(1) Coke
(2) Carbon
(3) Carbon dioxide
(4) Carbon monoxide

11. The reduction of Cr_2O_3, by heating it with aluminium is known as:-
(1) Smelting
(2) Roasting
(3) Calcination
(4) Aluminothermite process

12. Which of the following is obtained by hydrometallurgy :-
(1) Copper (2) Gold
(3) Silver (4) All of these

13. Aluminium is purified by :-
(1) Roasting
(2) Sublimation
(3) Electrolytic refining
(4) Reduction with carbon

14. In Goldschmidt thermite process, reducing agent is:-
(1) Fe (2) Na (3) Ca (4) Al

15. Heating the sulphide ore in air to remove sulphur is known as:-
(1) Roasting (2) Calcination
(3) Smelting (4) Fluxing

16. Liquation process is used for refining:-
(1) Bismuth (2) Lead
(3) Tin (4) All

17. A mineral is called ore if
(1) Metal present in the mineral is costly
(2) A metal can be extracted from it
(3) A metal can be extracted profitably from it
(4) A metal can not be extracted from it

18. Self reduction process is used in the extraction of:-
(1) Cu & Pb (2) Zn & Hg
(3) Cu & Al (4) Fe & Pb

19. The process of converting hydrated Alumina into anhydrous Alumina is called:-
(1) Roasting (2) Calcination
(3) Smelting (4) Dressing

20. The metallurgical process in which a metal is obtained from its oxide ore :-
(1) Smelting (2) Roasting
(3) Calcination (4) Froth floatation

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21. In the extraction of copper, metal obtained in the Bessemer converter is represented by which reaction ?
(1) $Cu_2S + 2Cu_2O \rightarrow 6Cu + SO_2$
(2) $Cu_2S \rightarrow 2Cu + S$
(3) $Fe + Cu_2O \rightarrow 2Cu + FeO$
(4) $2Cu_2O \rightarrow 4Cu + O_2$

22. Among following :–
(a) Zinc blende; ZnO
(b) Chromite; Magnetic separation.
(c) Bauxite; $Al_2O_3.2H_2O$
(d) Liquation; Hg like liquid metals
Which is/are not correctly matched :–
(1) (a) only (2) (b) only
(3) (d) only (4) (a) & (d) both

23. Silver can be separated from lead by :-
(1) Distillation (2) Amalgamation
(3) Filtration (4) Cupellation

24. The maximum temperature obtained in the....region of the blast furnace used in extraction of iron:-
(1) Reduction (2) Combustion
(3) Fusion (4) Slag formation

25. The concentration of chromite (FeO. Cr_2O_3) is done by :-
(1) Leaching process
(2) Magnetic separation
(3) Froth -flotation
(4) Calcination

26. Which of the following process represents smelting process
(1) $2\ PbS + 3O_2 \rightarrow 2PbO + 2SO_2\uparrow$
(2) $Al_2O_3.\ 2H_2O \rightarrow Al_2O_3 + 2H_2O$
(3) $Fe_2O_3 + CO \rightarrow 2Fe + 2CO_2$
(4) $Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr + Heat$

27. Which of the following match are incorrect :-
(a) Goldschmidt aluminothermite process - Cr_2O_3
(b) Mac Arthur cyanide process - Fe
(c) Mond process - Ni
(d) Van Arkel process – Au
(1) a, c (2) c, d
(3) b, d (4) a, b

28. Electro metallurgical process (electrolysis of fused salt) is employed to extract :–
(1) Lead (2) Silver
(3) Sodium (4) Copper

29. In the extraction of copper from copper pyrites, iron is removed as:-
(1) $FeSO_4$ (2) $FeSiO_3$
(3) Fe_3O_4 (4) Fe_2O_3

30. Which one of the following metals can not be extracted by using Al as a reducing agent :-
(1) Na from Na_2O (2) Cr from Cr_2O_3
(3) Mn from MnO_2 (4) V from V_2O_5

31. In the electrolytic reduction for aluminium extraction the electrolyte used is :-
(1) Fluorides of Al, Na and Ca
(2) $Al(OH)_3$ in NaOH solution
(3) An aqueous solution of $Al_2(SO_4)_3$
(4) Molten Al_2O_3

32. Which metal can be purified by distillation :-
(1) Cu (2) Ag (3) Fe (4) Hg

33. Carbon cannot be used in the reduction of Al_2O_3 because :-
(1) Carbon cannot reduce Al_2O_3
(2) The enthalpy of formation of CO_2 is more than that of Al_2O_3
(3) Pure carbon is not easily available
(4) The enthalpy of formation of Al_2O_3 is too high

34. Match list I with list II and select the correct answer using the codes given below the lists

List I	**List II**
A. Van Arkel method	I. Purification of titanium
B. Cyanide process	II. Concentration of Ag, Au
C. Cupellation	III. Purification of copper
D. Poling	IV. Refining of silver

Codes :

	A	B	C	D
(1)	I	II	IV	III
(2)	II	I	III	IV
(3)	IV	II	I	III
(4)	III	I	II	IV

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35. Anode mud obtained in electrolytic refining of copper contains :-
(1) Ag (2) Au (3) Pt (4) All

36. Which of the following reaction is not involved in thermite process :-
(1) $3Mn_3O_4 + 8Al \longrightarrow 9Mn + 4Al_2O_3$
(2) $Cr_2O_3 + 2AI \longrightarrow Al_2O_3 + 2Cr$
(3) $2Fe + Al_2O_3 \longrightarrow 2Al + Fe_2O_3$
(4) $B_2O_3 + 2Al \longrightarrow 2B + Al_2O_3$

37. Alumino thermite process is used for the extraction of metals, whose oxides are :-
(1) Strongly acidic
(2) Not easily reduced by carbon
(3) Not easily reduced by hydrogen
(4) Stongly basic

38. Match the following :-

I	II
(A) Calcination	a. $2Cu_2S + 3O_2 \rightarrow 2Cu_2O + 2SO_2$
(B) Roasting	b. $Fe_2O_3.nH_2O \rightarrow Fe_2O_3 + nH_2O$
(C) Slag formation	c. $Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr$
(D) Thermite process	d. $SiO_2 + FeO \rightarrow FeSiO_3$

	A	B	C	D
(1)	a	b	c	d
(2)	b	a	d	c
(3)	d	a	b	c
(4)	c	a	b	d

39. Main source of lead is PbS. It is converted to Pb by :-

A : $PbS \xrightarrow[\Delta]{air} PbO + SO_2$;

$PbO \xrightarrow[\Delta]{C} Pb + CO_2$

B : $PbS \xrightarrow[\Delta]{\text{insufficient air}} PbO + SO_2$;

$PbS + PbO \xrightarrow{\Delta} Pb + SO_2$

Self reduction process is :
(1) A (2) B (3) both (4) none

40. Match **List-I** with **List-II** and select the correct answer using the codes given below in the lists.

List-I (Metals)	**List-II (Process/methods involved in extraction)**
(a) Ni	1. Self reduction
(b) Al	2. Liquation
(c) Cu	3.Vapour phase refining
(d) Sn	4. Bayer's process

	(a)	(b)	(c)	(d)
(1)	3	1	2	4
(2)	3	4	1	2
(3)	1	2	4	3
(4)	3	2	4	1

41. Reducing agent in blast-furnace in extraction of Fe from Haematite is :-
(1) Coke in furnace
(2) Coke in upper part and CO in lower part of furnace.
(3) CO in most parts of the furnace
(4) CO in the furnace.

42. $PbS \xrightarrow[\Delta]{air} X$, $X + PbS \longrightarrow Pb + SO_2$. 'X' may be :-
(1) PbO (2) PbO_2
(3) PbO and $PbSO_4$ (4) PbO_2 and PbO

43. Extraction of zinc from zinc blende is achieved by:
(1) Electrolytic reduction
(2) Roasting followed by reduction with carbon
(3) Calcination followed by reduction with another metal
(4) Roasting followed by self-reduction

44. Match the following

1. Zincite	P Sulphide ore
2. Malachite	Q Halide ore
3. Horn silver	R Oxide ore
4. Iron pyrities	S Carbonate ore

(1) 1 – R; 2 – P; 3 – Q; 4 – S
(2) 1 – R; 2 – S; 3 – Q; 4 – P
(3) 1 – S; 2 – R; 3 – P; 4 – Q
(4) 1 – Q; 2 – S; 3 – P; 4 – R

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45. Which reaction is involved in extraction of Ag by cyanide process
(1) $AgBr + Na_2S_2O_3 \longrightarrow Na_3[Ag(S_2O_3)_2]$
(2) $AgCl + NH_4OH \longrightarrow [Ag(NH_3)_2]Cl$
(3) $Ag_2S + NaCN \longrightarrow Na[Ag(CN)_2]$
(4) None

46. Most abundant element in earth crust by weight is
(1) H (2) He (3) Fe (4) Al

47. Gravity separation is based on
(1) Difference in water solubility
(2) Difference in specific gravity
(3) Both
(4) None

48. Correct statement regarding froth floatation method is
(1) Ore particles wetted by water
(2) Froth carries the gangue particles
(3) As a depressant AgCl can be used for separation of ZnS and PbS
(4) Aniline can be used as froth stabilizers

49. Leaching can be used for which set of metals extraction
(1) Fe, Cu, Zn (2) Al, Fe, Ag
(3) Al, Ag, Au (4) Ag, Au, Zn

50. In electrolytic refining of copper, anode is of
(1) Pure copper (2) Graphite
(3) Impure copper (4) Na/Ag

51. Zone refining method is based on that
(1) Impurities are more soluble in water
(2) Impurities are more soluble in solid metal
(3) Impurities are more soluble in molten metal
(4) Impurities are more soluble in vapour metal

52. Which method is an example of vapour phase refining.
(1) Mond's process (2) Van Arkel method
(3) Both 1 & 2 (4) None

53. Van Arkel method of refining is used for :
(1) Zr, Ti (2) Ni, Pd
(3) Sn, Pb (4) Zn

54. Which one of the following can be obtained by carbon reduction of its metal oxide ?
(1) Cr (2) Fe
(3) Mn (4) Mg

55. The chemical formula of calamine is -
(1) $ZnCO_3$ (2) $CuFeS_2$
(3) Cu_2O (4) ZnO

56. Which of the following acts as collector in the froath floatation of galena ?
(1) Sodium ethyl xanthate
(2) Pine oil
(3) $CuSO_4$ solution
(4) NaCN or KCN

57. The iron obtained from the blast furnace is called-
(1) Pig iron (2) Cast iron
(3) Wrought iron (4) Steel

58. Magnetite is -
(1) Fe_3O_4 (2) Fe_2O_3
(3) Cu_2O (4) FeO

59. Malachite green is -
(1) $CuCO_3.Cu(OH)_2$ (2) Cu_2S
(3) $CuFeS_2$ (4) Cu_2O

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**3**	**3**	**2**	**3**	**4**	**1**	**1**	**3**	**4**	**4**	**4**	**4**	**3**	**4**	**1**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	**4**	**3**	**1**	**2**	**1**	**1**	**4**	**4**	**2**	**2**	**3**	**3**	**3**	**2**	**1**
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	**1**	**4**	**4**	**1**	**4**	**3**	**2**	**2**	**2**	**2**	**3**	**3**	**2**	**2**	**3**
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	
Answer	**4**	**2**	**4**	**3**	**3**	**3**	**3**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	

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Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT 2007

1. Sulphide ores of metals are usually concentrated by froth floatation process. Which one of the following sulphide ores offers an exception and is concentrated by chemical leaching?
(1) Sphalerite (2) Argentite
(3) Galena (4) Copper pyrites

AIPMT-Pre 2011

2. Which of the following elements is present as the impurity to the maximum extent in the pig iron ?
(1) Manganese (2) Carbon
(3) Silicon (4) Phosphorus

3. Which of the following pairs of metals is purified by Van Arkel method ?
(1) Ga and In (2) Zr and Ti
(3) Ag and Au (4) Ni and Fe

AIPMT-Mains 2011

4. The following reactions take place in the blast furnace in the preparation of impure iron. Identify the reaction pertaining to the formation of the slag:-
(1) $2C(s) + O_2(g) \rightarrow 2CO(g)$
(2) $Fe_2O_3(s) + 3CO(g) \rightarrow 2Fe(\ell) + 3CO_2(g)$
(3) $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$
(4) $CaO(s) + SiO_2(s) \rightarrow CaSiO_3(s)$

AIPMT-Pre 2012

5. Aluminium is extracted from alumina (Al_2O_3) by electrolysis of a molten mixture of:
(1) $Al_2O_3 + Na_3AlF_6 + CaF_2$
(2) $Al_2O_3 + KF + Na_3AlF_6$
(3) $Al_2O_3 + HF + NaAlF_4$
(4) $Al_2O_3 + CaF_2 + NaAlF_4$

6. In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with:
(1) Iron sulphide (FeS)
(2) Carbon monoxide (CO)
(3) Copper (I) sulphide (Cu_2S)
(4) Sulphur dioxide (SO_2)

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7. Identify the alloy containing a non-metal as a constituent in it.
(1) Bell metal (2) Bronze
(3) Invar (4) Steel

8. Which one of the following is a mineral of iron?
(1) Pyrolusite (2) Magnetite
(3) Malachite (4) Cassiterite

Re-AIPMT 2015

9. In the extraction of copper from its sulphide ore, the metal is finally obtained by the reduction of cuprous oxide with :-
(1) Copper(I) sulphide (2) Sulphur dioxide
(3) Iron(II) sulphide (4) Carbon monoxide

NEET-I 2016

10. Match items of **Column I** with the items of **Column II** and assign the correct code :

	Column-I		Column-II
(a)	Cyanide process	(i)	Ultrapure Ge
(b)	Froth floatation process	(ii)	Dressing of ZnS
(c)	Electrolytic reduction	(iii)	Extraction of Al
(d)	Zone refining	(iv)	Extraction of Au
		(v)	Purification of Ni

Code :

	(a)	(b)	(c)	(d)
(1)	(iv)	(ii)	(iii)	(i)
(2)	(ii)	(iii)	(i)	(v)
(3)	(i)	(ii)	(iii)	(iv)
(4)	(iii)	(iv)	(v)	(i)

NEET-II 2016

11. Zinc can be coated on iron to produce galvanized iron but the reverse is not possible. It is because:
(1) Zinc has lower negative electrode potential than iron
(2) Zinc has higher negative electrode potential than iron
(3) Zinc is lighter than iron
(4) Zinc has lower melting point than iron

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NEET(UG) 2017

12. Extraction of gold and silver involves leaching with CN^- ion. Silver is later recovered by :-
(1) Distillation
(2) Zone refining
(3) Displacement with Zn
(4) Liquation

NEET(UG) 2018

13. Considering Ellingham diagram, which of the following metals can be used to reduce alumina?
(1) Fe (2) Zn (3) Mg (4) Cu

NEET(UG) 2019

14. Which one is malachite from the following ?
(1) $CuFeS_2$ (2) $Cu(OH)_2$
(3) Fe_3O_4 (4) $CuCO_3.Cu(OH)_2$

NEET(UG) 2019 (ODISHA)

15. Identify the incorrect statement.
(1) The scientific and technological process used for isolation of the metal from its ore is known as metallurgy
(2) Minerals are naturally occurring chemical substances in the earth's crust
(3) Ores are minerals that may contain a metal
(4) Gangue is an ore contaminated with undesired materials

NEET(UG) 2020

16. Identify the **correct** statement from the following
(1) Pig iron can be moulded into a variety of shapes.
(2) Wrought iron is impure iron with 4% carbon.
(3) Blister copper has blistered appearance due to evolution of CO_2.
(4) Vapour phase refining is carried out for Nickel by Van Arkel method.

NEET(UG) 2020(COVID-19)

17. Match the elements in Column I with methods of purification in Column II.

Column I	Column II
(a) Boron	(i) Van Arkel method
(b) Tin	(ii) Mond's process
(c) Zirconium	(iii) Liquation
(d) Nickel	(iv) Zone refining

(1) (a)-(iv) (b)-(iii) (c)-(i) (d)-(ii)
(2) (a)-(iv) (b)-(iii) (c)-(ii) (d)-(i)
(3) (a)-(ii) (b)-(i) (c)-(iv) (d)-(iii)
(4) (a)-(iii) (b)-(iv) (c)-(i) (d)-(ii)

NEET(UG) 2021

18. Which one of the following methods can be used to obtain highly pure metal which is liquid at room temperature ?
(1) Electrolysis
(2) Chromatography
(3) Distillation
(4) Zone refining

19. Which of the following reactions is the metal displacement reaction ? Choose the right option.
(1) $2KClO_3 \xrightarrow{\Delta} 2KCl + 3O_2$
(2) $Cr_2O_3 + 2Al \xrightarrow{\Delta} Al_2O_3 + 2Cr$
(3) $Fe + 2HCl \rightarrow FeCl_2 + H_2\uparrow$
(4) $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2 + O_2\uparrow$

20. The maximum temperature that can be achieved in blast furnace is :
(1) upto 1200 K
(2) upto 2200 K
(3) upto 1900 K
(4) upto 5000 K

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	2	2	4	1	3	4	2	1	1	2	3	3	4	4
Question	16	17	18	19	20										
Answer	1	1	3	2	2										

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Exercise – III (Analytical Questions) Master Your Understanding

1. Given below are two statements :
Statement-I : Carbon cannot be used in reduction of Al_2O_3.
Statement-II : Leaching of Ag from Ag_2S is carried out by heating it with NaCN.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Statement-I and Statement-II are correct.
(2) Statement-I is correct but Statement-II is incorrect.
(3) Both Statement-I and II are incorrect.
(4) Statement-I is incorrect but Statement-II is correct.

2. Given below are two statements :
Statement-I : Serpeck process used for white bauxite to remove chief impurity of SiO_2.
Statement-II : Electrolytic refining is suitable in the extraction of Al, Cu & Ag.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Statement-I is incorrect but Statement-II is correct.
(2) Both Statement-I and II are incorrect.
(3) Statement-I is correct but Statement-II is incorrect.
(4) Statement-I and Statement-II are correct.

3. Given below are two statements :
Statement-I : Decomposition of $CaCO_3$ in Blast furanance is an exothermic process.
Statement-II : CaO is used as a flux for removal of acidic impurity of SiO_2 in blast furnace.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Both Statement-I and II are incorrect.
(2) Statement-I and Statement-II are correct.
(3) Statement-I is correct but Statement-II is incorrect.
(4) Statement-I is incorrect but Statement-II is correct.

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4. Given below are two statements :
Statement-I : $Cr_2O_3 + 2Al \rightarrow 2Cr + Al_2O_3$.
This reaction know Alumino-thermite process.
Statement-II : In roasting of copper pyrite's, pyrite completely converted into Cu_2O & FeO.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Statement-I is correct but Statement-II is incorrect.
(2) Statement-I and Statement-II are correct.
(3) Both Statement-I and II are incorrect.
(4) Statement-I is incorrect but Statement-II is correct.

5. Given below are two statements :
Statement-I : In the alumina-thermite process, Al act as an oxidising agent.
Statement-II : $Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3$,
(1) Statement-I and Statement-II are correct.
(2) Statement-I is incorrect but Statement-II is correct.
(3) Statement-I is correct but Statement-II is incorrect.
(4) Both Statement-I and II are incorrect.

6. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .
Assertion (A) : Zone-refining is very useful for producing semi-conductor and other metal of very high purity.
Reason (R) : Zone-refining process, impurities are more soluble in molten metal rather than in the solid metal.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(2) (A) is correct but (R) is not correct.
(3) (A) is not correct but (R) is correct.
(4) Both (A) and (R) are correct and (R) is the correct explanation of (A).

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7. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion (A) : In the extraction of Ag, complex $Na[Ag(CN)_2]$ is reacted with Zn.

Reason (R) : In cyanide process dilute solution of NaCN/KCN act s complexing.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A).

(2) (A) is correct but (R) is not correct.

(3) (A) is not correct but (R) is correct.

(4) Both (A) and (R) are correct and (R) is the correct explanation of (A).

8. Match the column :

Column-I		Column-II	
(1)	Titanium	(a)	Cyanide process
(2)	Aluminium	(b)	Kroll process
(3)	Chromium	(c)	Baeyer process
(4)	Silver	(d)	Thermite process

(1) (1) - (a), (2) - (b), (3) - (c), (4) - (d)

(2) (1) - (b), (2) - (c), (3) - (d), (4) - (a)

(3) (1) - (c), (2) - (d), (3) - (b), (4) - (a)

(4) (1) - (c), (2) - (d), (3) - (a), (4) - (b)

9. Match the column :

Column-I (Reaction)		Column-II (Name of Process)	
(1)	$Fe_2O_3+2Al \rightarrow 2Al_2O_3+2Fe$	(a)	Self Reduction process
(2)	$CuFeS_2+O_2 \rightarrow Cu_2S+FeS+Cu_2O+FeO$	(b)	Thermite process
(3)	$Fe_2O_3+C \rightarrow 2Fe+2CO$	(c)	Roasting process
(4)	$2PbO+PbS \rightarrow 3Pb+SO_2$	(d)	Smelting process

(1) (1) - (a), (2) - (b), (3) - (c), (4) - (d)

(2) (1) - (c), (2) - (d), (3) - (b), (4) - (a)

(3) (1) - (b), (2) - (c), (3) - (d), (4) - (a)

(4) (1) - (c), (2) - (d), (3) - (a), (4) - (b)

10. Match the column :

Column-I (Refining Process)		Column-II (Metal)	
(1)	Cupellation	(a)	Ge
(2)	Zone-refining	(b)	Ag
(3)	Van-Arkel process	(c)	Hg
(4)	Distillation	(d)	Ti

(1) (1) - (a), (2) - (b), (3) - (c), (4) - (d)

(2) (1) - (c), (2) - (d), (3) - (b), (4) - (a)

(3) (1) - (b), (2) - (c), (3) - (d), (4) - (a)

(4) (1) - (b), (2) - (a), (3) - (d), (4) - (c)

11. Match the column :

Column-I		Column-II	
(1)	Calcium	(a)	Carbon reduction
(2)	Zinc	(b)	Carbon monoxide reduction
(3)	Copper	(c)	Fused salt electrolysis
(4)	Iron	(d)	Self reduction

(1) 1 - c, 2 - a, b 3 - d, 4 – a, b

(2) 1 - a, 2 - b, 3 - c, 4 - d

(3) 1 - b, 2 - c, 3 - d, 4 - a

(4) 1 - b, 2 - a, 3 - d, 4 - c

12. Correct statement is –

(A) Calamine and siderite are carbonate ore.

(B) Argentite and chalcocite are sulphide ore.

(C) Malachite and Azurite are ore of copper.

(D) Iron pyrite's is an oxide ore of Iron.

(1) A, B & C are correct

(2) A & B are correct

(3) B & D are correct

(4) A & D are correct

13. Which of the following process are involved in the extraction of Fe from Fe_2O_3.

(1) Smelting

(2) Leaching

(3) Zone-refining

(4) Electrolytic reduction

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14. Which of these reaction are possible.
(1) $Al_2O_3 + 2Cr \rightarrow Cr_2O_3 + 2Al$
(2) $Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr$
(3) $Al_2O_3 + C \rightarrow Al + CO_2$
(4) $2Cu_2O + C \rightarrow 4Cu + CO_2$

15. The method used in Metallurgy to refine impure metal are –
(A) Mond process (B) Van-Arkel process
(C) Liquation process (D) Baeyer process
(1) A, B & C are correct
(2) A & C are correct
(3) A & C are correct
(4) A, B, C & D are correct

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**1**	**4**	**4**	**1**	**2**	**4**	**1**	**2**	**3**	**4**	**1**	**1**	**1**	**2**	**1**

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Important Notes

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